

The costs of adverse drug events in hospitalized patients. Adverse Drug Events Prevention Study Group.

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OBJECTIVE: To assess the additional resource utilization associated with an adverse drug event (ADE).

DESIGN: Nested case-control study within a prospective cohort study.

PARTICIPANTS: The cohort included 4108 admissions to a stratified random sample of 11 medical and surgical units in 2 tertiary-care hospitals over a 6-month period. Cases were patients with an ADE, and the control for each case was the patient on the same unit as the case with the most similar pre-event length of stay.

MAIN OUTCOME MEASURES: Postevent length of stay and total costs.

METHODS: Incidents were detected by self-report stimulated by nurses and pharmacists and by daily chart review, and were classified as to whether they represented ADEs. Information on length of stay and charges was obtained from billing data, and costs were estimated by multiplying components of charges times hospital-specific ratios of costs to charges.

RESULTS: During the study period, there were 247 ADEs among 207 admissions. After outliers and multiple episodes were excluded, **there were 190 ADEs, of which 60 were preventable.** In paired regression analyses adjusting for multiple factors, including severity, comorbidity, and case mix, **the additional length of stay associated with an ADE was 2.2 days (P=.04), and the increase in cost associated with an ADE was \$3244 (P=.04).**

For preventable ADEs, the increases were 4.6 days in length of stay (P=.03) and \$5857 in total cost (P=.07).

After adjusting for our sampling strategy, **the estimated postevent costs attributable to an ADE were \$2595 for all ADEs and \$4685 for preventable ADEs.**

Based on these costs and data about the incidence of ADEs, we estimate that the annual costs attributable to all ADEs and preventable ADEs for a 700-bed teaching hospital are \$5.6 million and \$2.8 million, respectively.

CONCLUSIONS: The substantial costs of ADEs to hospitals justify investment in efforts to prevent these events.

Moreover, these estimates are conservative because they do not include the costs of injuries to patients or malpractice costs.

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